

COUNTRY East Germany
SUBJECT Meeting of the Physical Society, East Berlin, on
18-21 March 1953

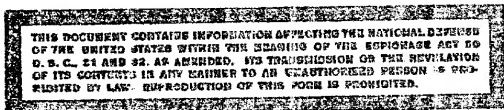
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1. The newly founded Physical Society of East Germany held a general meeting in East Berlin on 18-21 March 1953 in the festively decorated lecture hall of the German Academy of Science. In addition to many representatives from the Eastern Bloc countries, [redacted]

also were invited to attend. This meeting, as Prof. Dr. BOGOLUBOV (East Berlin) pointed out in his opening address, was to provide an opportunity to discuss the fundamental difficulties of the quantum theory. The basic reason which gave rise to the desire to discuss this topic was the fact that the methods of adjusting and normalizing, which are used in present day quantum electrodynamics, are looked upon as pure mathematical tricks and symbolism. Thus, although they lead to proper physical predictions, they are nevertheless without meaning because of their arbitrary character. For this reason, an analysis, which reveals the difficulties at the very roots of the theoretical basis of the quantum theory, ought to be carried out.

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2. Of the lectures and discussions which took place during the three days, the following two deserve special mention:

a. The lecture by Prof. L. INFELD (Warsaw) on the difficulties of classic electrodynamics. INFELD proceeded from the well-established statement that the classical field theory of the electron leads to divergent integrals for the field energy of this particle. He advanced the opinion that the difficulties will not be eliminated by means of the field quantum theory but that they must be removed from electrodynamics before one applies quantization. He reviewed objections regarding the present formulation of electrodynamics:

- (a). The unjustifiable use in his opinion of potentials within the theory which have no immediate physical meaning.
- (b). The role of the movements of the field singularities which are positively arbitrary.
- (c). The form of the field equations, especially the loose connections between field and four dimensional current, which finally lead to the infinitely large numbers of field singularities.

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Finally INFELD discussed various experiments made by SORE and DIRAC, and by DIRAC to overcome such difficulties--none of which are completely satisfactory. Quite interesting was the information, according to experiments done by his student HENRI K. that for every function, arbitrary but non-central symmetry, for the potential of a charge, it is possible to set up a Lagrangian-function, dependent only on the field strength, which has this potential as a solution.

2. The lecture by Prof. L. SZILARD (Budapest) entitled "Critical remarks Regarding Relativity and Quantum Theory." INFELD was tried to explain the quantum phenomena in terms of the emission and absorption of light in a very direct and clear manner. However, as a result of the relativity principle, the condition is imposed that certain effects brought about by quantum phenomena are able to spread with a speed greater than that of light. These ideas, which were presented in a very interesting manner, did not go unchallenged. In particular, Prof. DIRAC voiced objections. He pointed to the fundamental importance of the relativistic co-variance of all natural laws without which today's physics could not be imagined.

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3. The meeting closed with a lecture by Prof. W. HEISENBERG (Göttingen) entitled "Dirac's relativistic theory of quantum electrodynamics and its significance in the Schrödinger's Electrodynamics," which is gaining increasing importance in theoretical physics.